

Improvements are continually being made in the instruments used in every branch of science, and seismology is no exception. Prof. Omori publishes (*Publications of the Earthquake Investigation Committee*, No. 18) an account of a combination of light, inverted, vertical, with a heavy horizontal pendulum, with which it is claimed that a period of sixty seconds can easily be got from an instrument which does not exceed 1 metre in height and length of boom. Prof. Alippi, in the *Boll. Soc. Sismol. Ital.*, vol. x., No. 3, describes a simple device for overcoming the tendency to adherence in the electric contacts of delicate seismoscopes; it consists in placing an ordinary electric bell, without the gong, in the circuit, and fixing it so that the clapper beats against the stone slab on which the seismoscope rests. He finds that the vibration set up by this is sufficient to cause the two parts of the contact to separate, without in any way affecting the instrument, and suggests that it would be better to incorporate a small electric vibrator in the base of the seismoscope to act like the decoherer in wireless telegraphy.

The mysterious sounds known locally as mist-poeffers, barisal guns, &c., and now generally looked upon as seismic, are the subject of a short note by Prof. Alippi, who records two new localities and names. In the neighbourhood of Arezzo they are known as "baturlio della marina," and in the country between Bologna and Modena as "romba di Sassuolo." The multiplication of localities where these sounds are familiar, and of local names for them, is thought by Prof. Alippi to render a generic name desirable, and he suggests *brontid*, which has certainly the advantages of being descriptive and of implying no theory of origin (*Bol. Soc. Sismol. Ital.*, x., part iii.).

The relation between the variations in latitude at Tokio and the occurrence of earthquakes in Japan is the subject of a paper by Prof. Omori in No. 18 of the *Publications of the Earthquake Investigation Committee*; he finds that the destructive earthquakes of the last eight years all occurred during periods of high or low value of the latitude, and none at times when this was changing from one to the other. This result is said to be in harmony with the results obtained by Prof. Milne, but we may point out that this is not so; what Prof. Milne found was that the greatest frequency of world-shaking earthquakes coincided with the most rapid variation in the position of the pole, while Prof. Omori finds that the destructive earthquakes of Japan occurred at times when the latitude was stationary or only changing very slowly. What his investigation seems to show is that any connection which there may be between the occurrence of really great earthquakes and changes in the position of the axis of revolution, does not extend to local earthquakes.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

In accordance with the will of the late Mr. George Smith, of St. Louis, the treasurer of Harvard University has received, it is stated by *Science*, a payment of \$1,500. When this fund reaches \$9,000, by accumulation, three new dormitories are to be erected.

At the institute of archaeology of the University of Liverpool, a course of lectures dealing with recent researches on the ancient sites of Greece and with the historical geography of western Asia, particularly Palestine, has been arranged, and will be delivered on successive Wednesdays of this spring term. The lecturers are Dr. Caton and the Rev. M. Linton Smith.

THE President of the Board of Education has appointed Mr. T. S. Dymond, of the Essex County Technical Laboratories, Chelmsford, to an inspectorship under the Board, and to act as special adviser in matters of rural education, of nature-study in public elementary schools, of agricultural instruction in evening (including afternoon and Saturday) schools, and of the advancement of various forms of technical education in rural districts.

THE Bucks Education Committee, under the presidency of the chairman, Lord Buckinghamshire, has decided that a communication should be issued to all school corre-

spondents in the county requesting the managers to consider the desirability of introducing the teaching of the subjects of hygiene and temperance into the schools under their charge, and referring to the support given to the movement by 15,000 members of the medical profession.

ABOUT twenty scholarships ranging in value from 20*l.* to 50*l.* a year, and exhibitions for men and women tenable at University College, King's College, and the East London Technical College, in the faculties of arts, science, and engineering, will be offered for competition on June 27 and following days. Full particulars and forms of application may be obtained on application to the secretary of the Inter-Collegiate Scholarships' Board, King's College, Strand, W.C.

THE conference on school hygiene, which will be held at the University of London on February 7-10, will be opened with an address by Sir Arthur W. Rucker, F.R.S., on "The Coordination of the Teaching of Hygiene." The subjects of papers for discussion include the following:—"Physical and Mental Development during School Life," Miss A. J. Cooper; "Physical Inspection," Dr. A. K. Chalmers; "Building and Equipment," Sir Aston Webb, R.A.; "Sanitary Inspection," Dr. J. F. J. Sykes; "Training of Teachers," Prof. C. S. Sherrington, F.R.S.; and "Training of Scholars," Prof. Findlay.

THE *British Medical Journal* announces that the French Congress of School Hygiene will hold its second meeting in Paris this year at Whitsuntide. The following is the programme of discussions:—(1) the medical inspection of primary schools; (2) the education of families in school hygiene; (3) vacations and holidays; (4) tuberculosis and teachers; (5) the overloading of school courses and competitions for admission to large schools. Profs. Debove, Grancher, Landouzy, and Pinard are honorary presidents of the congress. All communications should be addressed to Dr. I. Ch. Roux, 46 rue de Grenelle, Paris.

THE annual general meeting of the Association of Technical Institutions is to be held at the Manchester School of Technology on January 27. The business will include the address of the president, Sir Philip Magnus, consideration of the council's report, the election of officers, and the reading of papers. The subjects to be dealt with are:—"The Coordination of the Work of Evening Continuation Schools and Municipal Technical Institutions," "The Cooperation of Employers in the Technical Training of their Apprentices," and "The Registration of Teachers in Technical Institutions."

THE annual general meeting of the members of the Association of Directors and Secretaries for Education was held in London on January 19 and 20. Mr. F. Wilkinson, the chairman for the year, presided, and in the course of his remarks dealt with the new regulations for secondary schools of the Board of Education. The following resolution was adopted by the association:—"That the policy at present pursued at South Kensington with reference to the erection, financing, and control of secondary day schools is calculated to cast a heavy burden upon the ratepayers, while at the same time depriving them of adequate control."

MR. A. J. GIMSON described before the Institution of Mechanical Engineers on January 20 his impressions of sixteen engineering workshops visited by him in America. In the course of his remarks, he said that a feature of the engineering industry that impressed him was "the close intercommunication of technical institutes and manufacturing workshops, of professors and manufacturers, and the presence, in minor positions of authority, of young men who had passed through a complete course of technical instruction." In this country, manufacturers as a rule have yet to learn the value of scientific investigation and scientific education as factors of industrial progress.

SIR WILLIAM WHITE delivered an address at the Battersea Polytechnic on January 21 on the systematic study of

engineering. He expressed the opinion that in the teaching of those who have to work during the day and have only the evening in which to study, Great Britain is making progress. In many departments of technical education there is still much to learn, but in classes such as those in polytechnics England has led the way. The full value of such studies is often not attained, said Sir William White, because of the absence of a scientific method of teaching. Some teachers are uninformed themselves, and the consequences are serious to their students. The want of a good English elementary education has been recognised, but in secondary education there is much which still remains undone. He advised every student of engineering to apply himself to the study of mathematics and applied mechanics, without which an engineer must be at a disadvantage and have to work in the dark.

REFERENCE was made last week (p. 286) to the grant of 400*l.* a year, for the next five years, voted by the Drapers' Company for work in the department of applied mathematics at University College, London. The company has long taken an active part in the development of higher education, and the enlightened policy which has prompted it to make grants in aid of university work and scientific research in London will, we trust, be adopted by other city companies. No better testimony to the value of such grants could be obtained than is afforded by the memoirs which have been published containing the results of work carried on in Prof. Karl Pearson's laboratory (see, for instance, a note in NATURE of November 3, 1904, p. 15). In acknowledgment of the assistance given by the Drapers' Company to work of this kind, the council of University College passed the following resolution at its last meeting:—"That the council desire to convey to the Court of the Worshipful Company of Drapers their best thanks for the vote of 2000*l.* towards further assisting the statistical work and higher teaching of the department of applied mathematics at University College. By their original grant of 1000*l.* for this purpose the court has enabled the council to appoint an adequate staff and to purchase valuable apparatus for the work of the department. By generously continuing their aid the court will enable the work thus begun to be placed upon a more permanent footing, and will prepare the way for the establishment of a permanent statistical institute."

A RETURN showing the amount spent on technical education by local authorities in England and Wales—with the exception of four which have made no return—during the year 1902-3, has been prepared by the Board of Education and issued as a Blue-book. The return shows that the total amount of the residue received under the Local Taxation (Customs and Excise) Act, by the councils of counties and county boroughs in England (excepting the county of Monmouth), in 1902-3 was 879,405*l.*, of which 840,253*l.* was appropriated to educational purposes, and 39,152*l.* to relief of rates, the latter sum including 22,366*l.* devoted by the London County Council to relief of rates. Of the 49 county councils, 45 were applying the whole of the residue to technical education, and 3 a part of it to the same purpose. Of the councils of the 64 county boroughs, 61 were devoting the whole, and 3 a part of the residue to technical education. Further, 4 county councils and the councils of 31 county boroughs, 101 boroughs, and 211 urban districts, in England, were making grants out of the rates under the Technical Instruction Acts; and 31 local authorities were devoting funds to technical education out of the rate levied under the Public Libraries and Museums Acts. Thirty-three local authorities raised sums by loan on the security of the local rate under the Technical Instruction Acts. The total amount expended on technical education during the year was 1,149,216*l.* The total amount of the residue paid to the 13 county councils and the councils of the 3 county boroughs in Wales and Monmouth was 42,201*l.* These local authorities devoted the whole of it to intermediate and technical education, chiefly under the Welsh Intermediate Education Act, 1889. The total amount expended on technical education in Wales and Monmouth under the Technical Instruction Acts during the year was 42,781*l.*

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SOCIETIES AND ACADEMIES.

LONDON.

Geological Society, January 4.—Dr. J. E. Marr, F.R.S., president, in the chair.—The marine beds in the Coal-measures of North Staffordshire: J. T. Stobbs, with notes on their palaeontology by Dr. Wheelton Hind. The stratigraphical position of the marine beds can be located with exactness *in situ*. The horizons can be utilised for the subdivision of the Coal-measures. The known horizons at which marine fossils have been obtained were enumerated, and a map of the distribution of these beds was given. The Speedwell and Nettlebank bed appears to be the most important marine bed in the coal-field. A detailed table of the beds in North Staffordshire was given to show the exact position of the marine beds. Dr. Hind, in his notes on the palaeontology, remarked that from the base of the Pendleside series to the top of the Coal-measures there is an unbroken succession of beds—at one time marine, at another estuarine, without unconformity.—The geology of Cyprus: C. V. Bellamy, with contributions by A. J. Jukes-Browne. The Kyrenia Mountains rise to heights of more than 3000 feet. They are composed of rocks tilted into a vertical position, altered by compression and intrusion, and are devoid of fossils. They are referred by Prof. Gaudry to the Cretaceous period, and are compared by him with the hippurite-limestones of Attica. The Kythraean rocks (Upper Eocene) are based on breccias and conglomerates made up of fragments of the Trypanian limestones. No fossils, except a few small tests of Globigerina, have been found in this series, which consists entirely of volcanic débris. The Idalian (Oligocene) series appears to rest conformably on the last. The gypsum-beds are largely developed in the south; the white chalky marls and limestones extend over nearly one-half of the island, and are always conspicuous from their intense whiteness. Foraminifera are abundant, and other fossils have been found which indicate that the beds are mainly of Oligocene age. Igneous rocks are most conspicuous in the centre of the island. They are intrusive into the formations already mentioned. The rocks include augite-syenite, rhyolite, liparite, olivine-dolerite, basalt, augite, and several varieties of serpentine. Miocene rocks have only been recognised in the south-east of the island. The Pliocene strata lie in horizontal or slightly inclined beds, resting unconformably upon all older rocks. The Pleistocene rocks sometimes attain a thickness of 50 feet. The cave-earths have yielded *Hippopotamus minimus* and *Elephas Cyriotes* to Miss D. M. Bate. An account of the chief economic mineral products of the island is given. Descriptions of some of the rocks, a note on the Miocene rocks, and a sketch of the physical history of the island are contributed by Mr. Jukes-Browne.

Mathematical Society, January 12.—Prof. A. R. Forsyth, president, in the chair.—Basic generalisations of well-known analytic functions: Rev. F. H. Jackson. Recent investigations have led to generalised forms of the serial expressions of certain functions. The functional characters of the new series, the domains of convergence, and the possibility of finding linear differential equations satisfied by the generalised functions are the matters that next claim attention. The author explained the degree of success which he had attained in these lines of investigation.—Current flow in rectangular conductors: H. Fletcher Moulton. The paper deals with the resistance of a rectangular lamina between electrodes which occupy portions of opposite sides, and the distribution of currents which flow in a conducting lamina bounded internally and externally by squares.—On the kinematics and dynamics of a granular medium in normal piling: J. H. Jeans. The paper is occupied with problems suggested by Prof. O. Reynolds's "Sub-mechanics of the Universe." An attempt is made to examine the question of the permanence or non-permanence of peculiarities of piling such as Prof. Reynolds interpreted as matter, electricity, magnetism, &c. The results go to show that such peculiarities would be transient, and that a universe constructed as imagined by Prof. Reynolds would suffer instant dissolution, after which particles of matter, charges of electricity, &c., would